Performance of Banking Sector in India

Synopsis

Submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy

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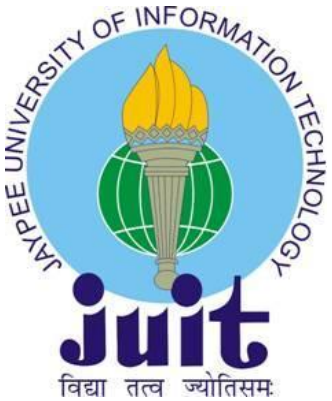

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June, 2018

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1. INTRODUCTION

A bank is a financial institution which offers its financial and other monetary services to its customers and users. A bank is usually considered as an organization which serves basic and essential banking services like cash deposits and lending loans to its customers. NBFC's are also there which gives many financial services without becoming a legal meaning of bank. Financial industry is having number of subsections; banks are one of this subsections which is very wide in itself. Indian banking system discussed as a system which provides liquidity services, cash management facilities to their users, account management services, portfolio management services (Vithhal, 2014). Indian banking system should not only be stress free but should be well enough to compete with latest technology along with challenging internal and external factors. Since long span of time banking system in India has achieved exceptional attainments to its credit. Banks are very important and prominent contributor of financial system in India (Vivek, 2016). Every bank protects money, deposits, and securities and provides credit options and other payment services including payment services, cheque facility, money orders etc. investments and insurance products are also now part of banking services. In spite of providing insurance services, investments services banks still continue to maintain its primary role as an accepting and lending funds to their customers.

The Financial crunch in the year 1997 and 2009 realized the world to have a healthy and controlled banking system to have a strong economy and its development. Liberalization on banking system came into existence through reforms in Indian Banking Sector in 1991.

Banking system in India has been developed I three distinct phases since 1786 (Lu, 2013).

1. Early Phase (1786- 1969)

   1100 small banks were there in India at that time. Banking Companies Act 1949 was established to have a smooth functioning of commercial banks. Central Bank of India (RBI) became Central banking Authority and authorize to control and supervise Banking Sector in India (Thagunna, 2013).

2. Post Nationalized Period (1969-1991)

   SBI was established to act as a key agent of reserve bank of India and manage all banking activities in India. During early phase of banking system 14 big banks were

nationalized to create public confidence in banking sector which gave surety and assurance of protection and sustainability to banking sector (Qingu, 2013).

3. Post Liberalization Period (1991-till now)

   In this era mobile banking, ATM, online banking were came into existence in order to bring liberalization in banking industry which made banking system more efficient, convenient and transparent (Qingu, 2013).

Development of banking industry is still going on and in its transition. PSUs constitute 75% of whole banking sector in India. Where Private Banks has promoted online banking and enriched the experience of people with latest technology. And they are likely to expand on India.

2. REVIEW OF LITERATURE:

Title	Year	Findings	Research Gap
Mgt of NPA in bank: a comparative study of commercial & cooperative banks with reference to selected banks in Pune.	2013	All PSB were having more than 9% CRAR which is matter of concern for Indian economy.	Random sampling was not accurate sample giving option to measure NPA, which could be bias.
A Study Of NPA On Selected Public And Private Sector Banks	2013	NPA ratio decreased from 11.95% at end of march 2003 to 3.28% march end at 2012.PNB was having low NPA as compared to others	Secondary is not well enough to know reason for variation in NPA level.
Management of NPA in Indian banks-A qualitative analysis	2012	After 2007 global crisis, competition and prudential norms reduce the growth of NPA. Operating expenses were higher for private sector. Advances were higher in public banks whereas capital and reserve surplus were	Role of technical efficiency, human capital, operating efficiency is ignored. Financial crisis on different sector differently has been ignored.

		higher for private banks.	
Mgt of NPA-A study of Indian public sector banks	2012	Under Basel norms, CRAR increase with 0.24% with which it becomes 12.3128 from 12.0728 at end march of SBI group. That means Indian banks were successfully achieving the targets given by Basel norms.	Weight age impact of Basel norms on NPA of public bank is ignored.
A comparative study on NPA in Indian banking industry.	2011	Advances of Private sector banks to weaker section were lower as compared to Public banks. But after 2009 advances of old private. Banks was more as compared to old one.	Only % age method was used for analysis and comparison whereas comparison b/w 2 different structure should require more bases for research.
Empirical study of NPA mgt. of Indian public sector banks	2010	NPA Decreased by 16.5% in 2008 but before 2006 it was increasing at increasing rate. In that period recovery was also found for public sector banks.	Reason for increased in NPA of period 2008-09 is ignored. Only agricultural sector was held main factor to rise in NPA.
Strategic env. And intellectual capital of Indian banks	2009	In case of human efficiency Private banks were having more profits per employee and foreign banks more than that private banks initiated ATM and latest tech.	Impact of strategic decision on banks performance was ignore.
Evaluation of technical efficiency and ranking of public sector banks in India	2008	In PSB 75% of total banking industry spread in rural and urban areas of countries. Whereas private banks were less labor intensive and less number of branches. PSB was having high market share in deposits.	Contribution of technical efficiency in NPA mgt. was ignored.
The intellectual capital performance	2007	SBI was leading bank group for each variable	Impact of human capital, capital

of Indian banking sector		among banks and mostly all foreign banks follows that.	employed on NPA was ignored.
Performance benchmarking and strategic homogeneity of Indian banks	2002	DEA was proved successful in Taiwan, Australia, UK, and Canada. Performance of public banks improves over years except few banks. Public banks were good performer as compared to foreign banks.	Performance efficiency for individual sector separately was ignored.
Are Non-Performing assets Gloomy from Indian Perspective?	1999	Due to NPA Interest income ,profitability ,cost of capital gets affected	Only factors affecting NPA has been stressed and methods for recovery has been ignored.
FOREIGN STUDIES			
Foreign banks entry and bank performance in GCC countries	2016	Foreign banks were linked with lower before tax profits, non-interest income, and average loan interest and loan loss provision. That increased result entry of foreign bank does not increase the overhead cost in short run.	Effect on productivity and marketability of Indian bank due to entry of foreign bank was ignored.
Determinants of banks profitability	2014	The effect of specific characteristic of bank and macroeconomic determinants in two ratio(ROE,NIM). Loans, credit risk, cost have +ve impact on bank performance whereas NIM have-ve relation with profitability.	
The effects of ownership structure on bank profitability in Kenya	2013	Banks in sample produce same level of o/p of Approx 46-67% .large banks were used more efficient in overall technical	Relation b/s Productivity and size of bank was ignored.

		terms. Which was followed by small banks then medium size banks?	
The impact of foreign bank strategies on the behaviour and performance of czech and slovak bank in the financial crisis.	2013	Cost income were –ve related with banks performance and coefficient of size was having –ve impact on ROA. Reserve loan variable has -ve impact on banks performance.	
Bank size and efficiency in developing countries: intermediation approach vs value added approach and impact of non-traditional activities	2013	-ve growth of -2.3% world trade also decline. But raiffeisen bank international despite of crisis performed better due to their strategy composed of reduction in cost, risk mgt. collection of debts.	Financial crisis impact on different bank performance was avoided.
Determinants of Islamic and conventional banks performance in GCC countries	2012	Profitability of banks is influence by loans, total equity, inflation rate and operational efficiency.	
Consequences of the foreign bank implantation in developing countries and its impact on local efficiency	2010	Domestic bank found it difficult to get adjusted in new env. Degradation of efficiency level shows that banks were failed to effectively use of I/P for reducing cost.	Impact of foreign banks entry on domestic was not measured.
Are foreign banks in developing banks are more productive? The case if Taiwan	2010	Productivity of domestic banks was higher as compare to foreign banks, Taiwan foreign banks were not having better technology advantage, managers of domestic banks work hard to learn more mew methods	Relationship b/w productivity before reforms and after reforms was avoided. Data was collected only for 4 years which cannot reliable
Growth strategy and bank profitability: case of housing bank	2010	Domestic investors range from a low of 13452147 to high of	

		75450689 with mean of 48632450 and std dv. Of 14452457. Domestic ownership have +ve and significant impact on profitability.	
Banking supervision and nonperforming loans: a cross country analysis	2009	Countries like Egypt, Nigeria, Philippines, morocco suffered from bad loans. While others like Finland, Australia, and Spain were having less number of bad loans. Supervisory role surveillance does not directly affect NPL but only create working env.	Relationship b/w capital adequacy ratio on performance of foreign bank, domestic bank was ignored. Study was done only for 4 years.
Key drivers for soundness of the banking sector: lessons for developing countries	2006	Infrastructure, IC has positive but insignificant effect on soundness of bank. Institution and integrity have +ve impact on soundness of bank.	Impact on return of infrastructure, IC, innovation on different sized bank was not studied

3. **OBJECTIVES OF THE STUDY**

The present study analyses the performance of banks in India with context to its efficiency, productivity, bank failure and bank stock performance. Therefore, the following objective has been finalized:To study the performance and efficiency of different banking sector in India with reference to different inputs / outputs.

1 To study the NPA provision creation effect on banking performance and how by using financials of bank, its failure can be predicted in advance.

2 To study the impact of NPA on short-term performance of the Equity Share Price of the Bank and determining its efficacy for the Trading Opportunities in the Capital Market

Objective first, focused on highlighting the efficiency and performance of banking sector in India with relation to their productivity. For that CAMEL is used to analyze financial health of the banks and, to validate its results DEA model has been used to know the efficiency score through key inputs and outputs of banks. 2nd objective measures the portion from every bank profits that they sacrifice from their revenues and profits at the cost of provision creation otherwise this would have been increase profits in banks' balance sheet. NPA was found the prime reason for any bank failure, this study has proposed a model, by using which bank can predict the early signs of their bankruptcy that would help them to take corrective actions in advance, because according to IBC code 2016 organizations will be given very less time for recovery or windup. In the third objective impact of NPA performance on bank stock performance has been studied and attempt has been made to use that impact or relation in the capital market as a trading opportunity in capital market. Because creation of NPA locked the shareholder's fund and any trend in bank stock price impacts on shareholder's wealth.

4. PERFORMANCE AND EFFICIENCY OF DIFFERENT BANKING SECTORS IN INDIA

This objective is divided into two parts, first, to study the overall financial health of banks using CAMEL method which is considered best to analyze financial position of any organization. In the second part Data Envelopment Analysis has been used to study the efficiency in the form of productivity in order to compare financials (CAMEL) and productivity (DEA) of the banks. In addition to this, an effort has been made to study the banks performance by predicting the banks' profits and NPA using historical trends and comparing with the actual result. The present study is contributing to existed study by involving all major banks from all banking sector and has tried giving result in form of dominating sector on performance basis from all. Which is being presented as comparative study and that will provide a base structure to study further in current research.

The present study is different from previous done studies in the way that, the authors considered on one sector public, private or foreign .Therefore the present study is supposed to provide better results as compared to earlier studies because it captures all the three of leading banking sector collectively in one study tested on CAMEL and DEA parameters which has not been considered so far.

4.1. METHODOLOGY

20 leading banks in India from the public sector, 14 banks from the private sector and 7 banks foreign banks have been selected for this study. CAMEL is a ratio-based model used to evaluate the financial performance of banks with the help of different criteria, viz. Capital Adequacy, Asset Quality, Management Quality, Earnings and Liquidity. The present study is a descriptive research study based on analytical research design. To measure the capital adequacy, bank supervisors currently use the capital-risk asset ratio.

Further to validate banks productivity and efficiency DEA (Data Envelopment Analysis) has been done which helps in analysing the productivity efficiency of any organization. DEA can deal with multiple inputs vs. multiple output relations in a single framework; it has been becoming a method of choice for efficiency evaluation in recent days. DEA modelling allows the analyst to select inputs and outputs in accordance with a managerial focus. DEAOS software has been used for the same. For NPA and profitability prediction Neural network 7.5 version was used. For performance analysis (CAMEL) data has been used for the year 2001-2013 whereas for DEA, years from 2002- 2014 has been taken.

4.1.1. VARIABLES USED

Table 4.1: Capital Ratio Analysis

Ratios	Formula	Criteria
CAR	$\text{CAR} = \frac{\text{Tier one Capital+Tier Two Capital}}{\text{Risk Weighted Assets}}$	$\geq 8\%$

(Source: Credit Analysis of Financial Institution)

Table 4.2: Asset Quality Ratio Scale

Ratios	**Formula**	**Criteria**
Net NPA Ratio	$\frac{\text{Net NPA}}{\text{Total Advance}}$	$\leq 1\%$

(Source: Credit Analysis of Financial Institution)

Table 4.3: Business per Employee Ratio Scale

Assigned Scale	Scale 1 (Very Good)	Scale 2 (Satisfactory)	Scale 3 (Fair)	Scale 4 (Marginal)	Scale 5 (Worst)
Business per Employee	≥ 4 Crore	≤ 4 Crore ≥ 3 Crore	≤ 3 Crore ≥ 2 Crore	≤ 2 Crore ≥ 1 Crore	≤ 1 Crore

(Source: Credit Analysis of Financial Institution)

Table 4.4: Earning Ratio

Ratio	Formula	Criteria
Return on Asset	$\frac{\text{Net Interest Income}}{\text{Assets Growth Rate}}$	≥ 1%

(Source: Credit Analysis of Financial Institution)

Table 4.5: Liquidity Ratio

Ratio	Formula	Criteria
Credit Deposit Ratio	$\frac{\text{Total Credit}}{\text{Total Deposits}}$	≤ 80%

(Source: Credit Analysis of Financial Institution)

Table 4.6: The CAMEL's Composite Rating

Rating Scale	Rating Range	Rating Analysis	Exposure Limits	Rating Interpretation
1	1.0-1.4	Outstanding	1st Limit	The bank outperforms the average bank in all respects and by easily measurable differences.
2	1.6-2.4	Superior	2nd Limit	Measurably better than the average bank, but not quite outstanding in all respects
3	2.6-3.4	Average	3rd Limit	A well-run, good bank that just meets all of the major standards.
4	3.6-4.4	Under-perform	NR	The bank demonstrates a major weakness that if not corrected, could lead to as very severe or unsatisfactory condition that will threaten its existence. This would also include major financial and or managerial surprises
5	4.6-5.0	Doubtful	NR	The bank's financial health is substandard, with asset quality impairing over half of the bank's primary capital. If not corrected further deterioration will lead to regulatory control and a high probability of failure.

(Source: Credit Analysis of Financial Institution)

DEA Model

The following model was specified:

Outputs: Y1 = Advances

Y2 = Interest Income

Inputs: X1 = Number of employees

X2 = Deposits

Number of employees is considered as input because without human resource all efforts made in form of acquiring land, loans, fixed assets are worthless. Human resource is having the capability to converge maximum output from minimum input. Total deposits (a Liability item on balance sheet) are considered as an input from economics point of view because banks are supposed to perform intermediation function to transform loans out of the deposits. Interest income is considered as one of the output because that is mostly taken as a parameter to evaluate the banking performance in context of contribution to banks current earnings. Loan is being accepted as output having the same reason deposits is accepted as input.

Efficiency =1 considered efficient

Efficiency score nearest to 1 considered efficient

4.2. DATA ANALYSIS AND RESULTS

Below tables are showing financial performance and productive efficiency of different banks using CAMEL and DEA. Analyzation of results has been discussed below.

Table: 4.7

CAMEL Composite Rating With DEA Score

SBI Group	Rating	DEA	Public Sector Banks	Rating	DEA	Private Sector Banks	Rating	DEA	Foreign Banks	Rating	DEA
State bank of Hyderabad	2	85%	Corporation bank	2	78%	Ratnakar Bank	3	90%	Bank of Ceylon	3	63%
SBI	3	87%	Union bank of India	2	90%	Yes Bank	2	66%	Barclays Bank	2	99%
State Bank of Patiala	2	87%	IDBI	2	100%	Kotak Mahindra Bank	2	70%	Bank of America	2	99%
State Bank of B&J	2	86%	Bank of Baroda	2	79%	ICICI Bank	2	75%	Deutsche Bank	2	80%
State bank of Travancore	3	87%	Canara Bank	2	82%	J&K Bank	2	83%	Citi Bank	2	80%
State Bank of Mysore	3	88%	Andhra Bank	2	81%	Nainital Bank	2	84%	Royal bank of Scotland	2	67%
			PNB	2	89%	HDFC Bank	2	93%	StandardChartered Bank	2	68%
			Vijaya Bank	2	87%	IndusInd Bank	2	59%			

			Oriental bank of commerce	2	86%	City Union Bank	2	91%					
			Allahabad Bank	2	81%	Axis Bank	2	96%					
			Punjab And Sind Bank	3	84%	South Indian Bank	2	86%					
			Bank of India	3	83%	Development credit Bank	2	89%					
			UCO bank	3	85%	ING Vyasya Bank	3	92%					
			Central bank of India	3	79%	DhanLaxmi Bank	3	86%					

Table: 4.8

1. Capital Adequacy Ratio														
SBI Group	**Rating**	**Rank**	**DEA Score**	**Public Sector**	**Rating**	**Rank**	**DEA Score**	**Private Sector**	**Rating**	**Rank**	**DEA Score**	**Foreign Banks**	**Rating**	**Rank**	**DEA Score**
State bank of Hyderabad	1	1	85	Corporation bank	1	1	78	Ratnakar Bank	1	1	99	Bank of Ceylon	1	1	63
SBI	1	2	87	Union bank of India	1	2	90	Yes Bank	1	2	66	Barclays Bank	1	2	99
State Bank of Patiala	1	3	87	IDBI	1	3	100	Kotak Mahindra Bank	1	3	70	Bank of America	1	3	99
State Bank of B&J	1	4	86	Bank of Baroda	1	4	79	ICICI Bank	1	4	75	Deutsche Bank	1	4	80
State bank of Travancore	1	5	87	Canara Bank	1	5	82	J&K Bank	1	5	83	Citi Bank	1	5	80

Table: 4.9

2. Asset Quality															
SBI Group	**Rating**	**Rank**	**DEA Score**	**Public Sector**	**Rating**	**Rank**	**DEA Score**	**Private Sector**	**Rating**	**Rank**	**DEA Score**	**Foreign Banks**	**Rating**	**Rank**	**DEA Score**
State Bank of Patiala	2	1	87%	Andhra Bank	1	1	86%	Nainital Bank	1	1	84%	Bank of America	1	1	99%
State bank of Hyderabad	2	2	85%	Corporation bank	1	2	78%	Yes Bank	1	2	66%	Deutsche Bank	1	2	80%
State bank of Travancore	2	3	87%	Oriental bank of commerce	2	3	86%	HDFC Bank	1	3	93%	Standard Chartered Bank	1	3	68%
State Bank of B&J	2	4	86%	IDBI	2	4	100%	J&K Bank	1	4	83%	Citi Bank	2	4	80%
State Bank of Mysore	2	5	88%	PNB	2	5	89%	Axis Bank	2	5	96%	Royal bank of Scotland	2	5	67%

Table: 4.10

3. Management Efficiency														
SBI Group	Rating	Rank	DEA Score	Public Sector	Rating	Rank	DEA Score	Private Sector	Rating	Rank	DEA Score	Foreign Banks	Rating	Rank	DEA Score
State bank of Hyderabad	3	1	85%	IDBI	1	1	100%	ICICI Bank	1	1	75%	Barclays Bank	1	1	99%
State Bank of B&J	3	2	86%	Oriental bank of commerce	2	2	86%	Axis Bank	1	2	96%	Bank of America	1	2	99%
State Bank of Patiala	3	3	87%	Corporation bank	2	3	78%	HDFC Bank	1	3	93%	Deutsche Bank	1	3	80%
State bank of travancore	4	4	87%	Andhra Bank	3	4	86%	IndusInd Bank	1	4	59%	Citi Bank	1	4	80%
SBI	4	5	87%	Canara Bank	3	5	82%	Kotak Mahindra Bank	3	5	70%	Standard Chartered Bank	2	5	68%

Table: 4.11

4. Earning Efficiency														
SBI Group	Rating	Rank	DEA Score	Public Sector	Rating	Rank	DEA Score	Private Sector	Rating	Rank	DEA Score	Foreign Banks	Rating	Rank	DEA Score
SBI	1	1	87%	PNB	1	1	89%	ICICI Bank	1	1	75%	Citi Bank	1	1	80%
State bank of Hyderabad	1	2	85%	Canara Bank	1	2	82%	HDFC Bank	1	2	93%	Standard Chartered Bank	1	2	68%
State Bank of Patiala	1	3	87%	Bank of Baroda	1	3	79%	Axis Bank	1	3	96%	Royal bank of Scotland	1	3	67%
State bank of travancore	1	4	87%	Bank of India	1	4	83%	Kotak Mahindra Bank	1	4	70%	Deutsche Bank	1	4	80%
State Bank of B&J	1	5	86%	IDBI	1	5	100%	Yes Bank	1	5	66%	Barclays Bank	1	5	99%

Table: 4.12

5. Liquidity Position														
SBI Group	Rating	Rank	DEA Score	Public Sector	Rating	Rank	DEA Score	Private Sector	Rating	Rank	DEA Score	Foreign Banks	Rating	Rank	DEA Score
SBI	5	1	87%	IDBI	5	1	100%	Ratnakar Bank	5	1	90%	Barclays Bank	5	1	99%
State Bank of Mysore	5	2	88%	Andhra Bank	5	2	86%	ICICI Bank	5	2	75%	Bank of America	5	2	99%
State bank of travancore	5	3	87%	PNB	5	3	89%	Kotak Mahindra Bank	5	3	70%	Standard Chartered Bank	5	3	68%
State Bank of B&J	5	4	86%	Union bank of India	5	4	90%	IndusInd Bank	5	4	59%	Deutsche Bank	5	4	80%

State Bank of Patiala	5	5	87%	Bank of India	5	5	83%	HDFC Bank	5	5	93%	Citi Bank	5	5	80%

Table 4.13: NPA Prediction for the Year 2016

Banks	Prediction	Good/Bad	Residual
State Bank of India	567460	Good	-206
Allahabad Bank	101830	Good	-18251
Andhra Bank	67972	Good	793
Bank of Baroda	162817	Good	-203
Bank of India	219743	Good	2190
Canara Bank	110971	Good	19428
Central Bank of India	127588	Good	-8858
Corporation Bank	45537	Bad	25530
IDBI Bank Ltd.	129557	Good	-2707
Oriental Bank of Commerce	77432	Good	-770
Punjab & Sind Bank	26644	Good	4178
Punjab National Bank	244150	Good	12798
UCO Bank	115361	Good	-12710
Vijaya Bank	28023	Good	-3590
Union Bank of India	65757	Good	-228
City Union Bank	-1608	Bad	4967
Dhanalakshmi Bank	2280	Bad	3303
UTI Bank	46457	Good	-5355
Development Credit Bank	-2184	Bad	4045
HDFC Bank	25747	Good	8637
Kotak Mahindra Bank	8205	Bad	4167
ICICI Bank	151717	Good	-770
IndusInd Bank	4801	Good	828
Yes Bank	-4056	Bad	7190

Table 4.14: Net Profit prediction for the year 2017

Banks	Prediction	Good/Bad	Residual
State Bank of India	1,04,841.00	Good	0.00
Allahabad Bank	-30,367.12	Good	-984.88
Andhra Bank	22,472.83	Good	-5,039.83
Bank of Baroda	1,38,314.00	Good	0.00
Bank of India	1,38,314.00	Bad	-2,94,145.00
Canara Bank	11,209.59	Good	0.41

Central Bank of India	-24,287.67	Bad	-103.33
Corporation Bank	56,121.00	Good	0.00
IDBI Bank Ltd.	-11,636.79	Bad	-39,944.21
Oriental Bank of Commerce	-10,940.00	Good	0.00
Punjab & Sind Bank	39,881.16	Bad	-19,773.16
Punjab National Bank	13,248.00	Good	0.00
UCO Bank	1,725.53	Bad	-20,232.53
Vijaya Bank	50,172.50	Bad	24,876.50
Union Bank of India	3,41,146.21	Good	2,14,063.79
City Union Bank	37,528.14	Good	12,748.86
Dhanalakshmi Bank	18,027.54	Bad	-20,121.54
UTI Bank	3,67,928.00	Good	0.00
Development Credit Bank	19,891.25	Good	76.75
HDFC Bank	1,45,496.00	Good	0.00
Kotak Mahindra Bank	3,41,145.32	Good	4.68
ICICI Bank	9,80,109.00	Good	0.00
IndusInd Bank	25,602.41	Good	3,076.59
Yes Bank	28,293.14	Good	3,04,716.86

Table 4.7 shows composite score of CAMEL rating with DEA productive efficiency score. It was found that private banks were having higher CAMEL rating as compared to other categories that show that financial health of private banks is better than others sectors. As Composite score and DEA score was not able to give clear picture for comparison so, for further analysis we divided results into different variable separately and used ranking method for more clarity from table 4.8 to 4.12.

Results of different variable with productivity analysis is discussed which shows following outcomes.

- C- All sector were having good financial health in case of capital adequacy but in ranking it was observed that lower rank banks of public banks were having high efficiency score as compared to high rank bank of private banks which shows the good productivity of public banks.

- A- In case of Asset Quality PSB were having higher rating as compared to other sectors that means public sector banks are suffering from higher NPA issues. But again after having higher NPA productive efficiency of PSB was found good.
- M- In case of Management efficiency PSBs were having poor rating that shows that management of public banks is not satisfactory as compared to other sectors where management efficiency of private banks is much better than PSBs. It was also found that in spite of having poor management PSBs were having good productive efficiency as compared to private banks leaving Axis banks and HDFC.
- E- In case of Earing efficiency all sectors were having equal rating but again it was found that lower rank bank of PSBs were having good productive efficiency as compared to other sectors leaving Axis and HDFC banks.
- L: Liquidity rating of all sector of bank was found weak that means all banks they were not able to manage their advances and deposits properly.

Public bank's rating was good except in Asset quality and management efficiency. Asset quality reflect NPA condition whereas management efficiency includes employees performance that contributes in NPA by poor and wrong lending which becomes cause of high bad loans for banks. Merely generating more profits and expanding the spread is not sufficient to prove the efficiency of the banks, the path of growth is also important. It all depends upon how the banks get maximum output from minimum inputs. Due to good capital adequacy public banks have fewer amounts to lend which reflects in lower management efficiency for public banks but surprising thing is in spite of less amount of lending they have high NPA.

5. NPA AND ITS PROVISIONING EFFECTS ON PERFORMANCE OF DIFFERENT BANKS IN INDIA.

It was found from the literature that NPA is one of the biggest reason that takes huge part of banks profitability. So taking this reason further, this study associated provisioning norms of the bank which they have to create against NPA due to which a major portion of the banks revenue goes into provision creation. So this study made an attempt to measure the portion from every bank that they sacrifice from their profit at cost of provision creation otherwise this would have been increased profits in banks' balance sheet.

NPA is one of biggest reason for bankruptcy because that increase banks liability and make bank survival in dark. In current scenario RBI has taken decisions to shut down some bank business in coming years and some banks needs to get merged with other banks for their survival.so taking this picture further, study has proposed a model to predict bank failure in its early stage using its financials, that will actually be a helpful for organization to identify early sign of bankruptcy so that firm can take corrective actions in advance and to stabilize its performance. Current study will validate few decisions taken by RBI on bank failure model.

5.1. METHODOLOGY:

- CAMEL
- Bank Failure Model

The computation will be in such a way that after calculating rating of each component (CAMEL), rating is being combined and average of sum has been calculated. Rating from 1.0-1.4 comes under outstanding category and that indicate that bank is able to perform all of its functions fully with future protection of solvency. Whereas rating range 4.6- 5.0 comes under doubtful performance that indicates that banks financial health is in danger and it is on the way of bankruptcy expressing high probability of bank failure. So it is not at all recommended for bank to reach at this rating scale. Banks that comes in rating scale of 4 or 5 should not considered by investors as an investment option.

Thus the purpose of study is to observe banks different level of efficiency with the help of CAMEL and build a model that can predict bank failure which will be early warning system for banking industry

Discriminant Analysis involves the determination of a linear equation like regression that will predict which group the case belongs to. The form of the equation or function is:

$$D = v_1X_1 + v_2 X_2 + v_3 X_3 + \ldots\ldots\ldots\ldots\ldots\ldots + v_i X_i + a$$

Where

D= Discriminant Function

v = Discriminant coefficient or weight for that variable

X= Variable Score (Independent)

a = Constant

i = number of predictive variables

Result Score Evaluation

Bankruptcy Model

Z' > 2.9 -“Safe” Zone
1.23 < Z' < 2. 9 -“Grey” Zone
Z' < 1.23 -“Distress” Zone
_ve - Enter bankruptcy Stage

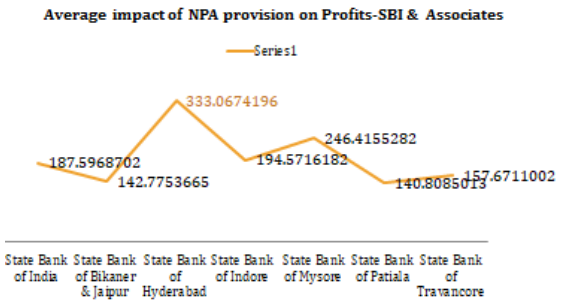
Failure model which basically works on multivariate discriminant analysis, is applied on 13 banks which are merged with different banks from year 2006 to 2016. As those merged banks are considered as the banks which are not performing well and are financially unstable banks but still have scope to improve if associated with other bank. Here 2 groups are created one group is ‘1’ one which is considered as group of below average banks (merged bank) or financially troubled banks. Another group is ‘2’ Two which is a group of financially unstable banks. RBI is planning to windup these banks in coming years. Here 13 banks are used in this MDA analysis.

Table: A
Different Bank Group:

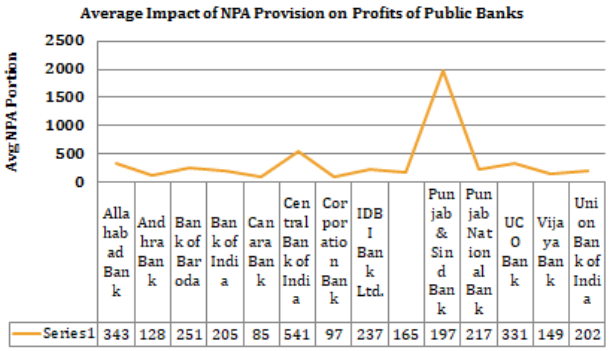
Group 1	**Group 2**
Below Average(Merged)	**About to Fail**
State Bank of Hyderabad	Uco bank
State Bank of Mysore	Indian Overseas Bank
State Bank of Patiala	Central bank of India
State Bank of Travancore	Dena Bank
INGVyasya	Bank of Maharashtra
Bank of Rajasthan	
Centurian Bank	
Bharat Overseas bank	

5.2. DATA ANALYSIS AND RESULTS

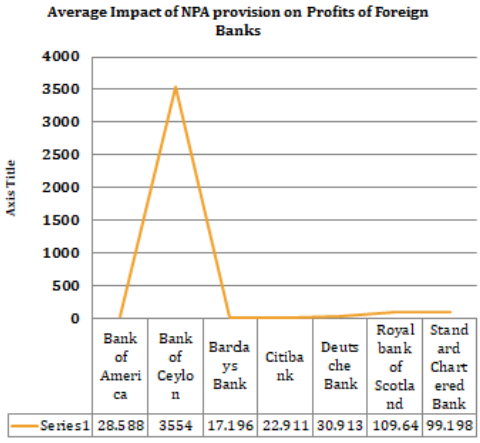
Graph 5.1



Graph 5.2



Graph 5.3



Graph 5.4

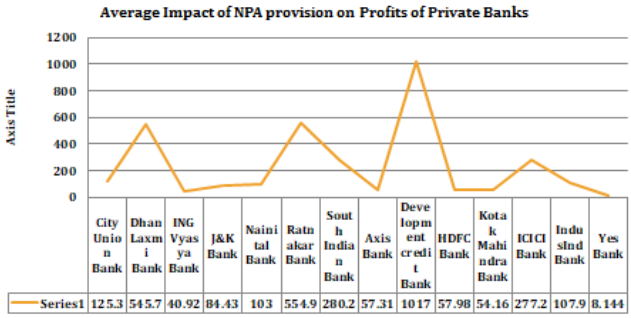


Table 5.1
Signs Throgh Mean

Functions at Group Centroids

Group (Banks)	Function 1
Below AVG	1.311
About to fail	-2.360

Unstandardized canonical discriminant functions evaluated at group means

Table 5.2
Discriminant Score

	Case Number	Actual Group	Discriminant Scores: Function 1
Original	1	1	1.634
	2	1	.959
	3	1	.463
	4	1	-.422
	5	1	.875
	6	1	2.267
	7	1	1.640
	8	1	2.578
	9	1	1.808
	10	2	-3.143
	11	2	-3.883
	12	2	-1.612
	13	2	-1.958
	14	2	-1.206

Impact of provision creation was calculated in graph 5.1-5.4 and it was found that State Bank of Hyderabad and State bank of Mysore were suffering from the huge Profit Loss due to NPA and Provision that was 333% and 246%.Among Public Sector Banks Punjab and Sind bank and Allahabad Bank were sacrificing their Profit at cost of Provision. Among Private banks Development credit bank and Ratnakar bank were looser of great portion of their profits due to its provision. Among Foreign banks Bank of Ceylon and Royal bank of Scotland were suffering from huge loss of their profit.

After giving huge impact on profitability due to provision creation against NPA, NPA and provision were coming as key reason for bankruptcy so, need was felt for any tool or model which can identify bank failure in early stage rather than coming into highlight in last stage i.e bankruptcy.

Further by applying Discriminant analysis we got the ratios that are very important indicator of bank failure and observance of these ratios are very important for bank to keep eye on bank failure earning capability and management efficiency is found critical ratios that can put bank in financial trouble. So in order to identify early sign of bankruptcy, bank failure model was proposed and tested on few decisions of RBI.

In above table 5.1 Group mean has been shown that has clearly shown that group 1 i.e merged banks have positive mean and group 2 i.e those bank RBI is thinking of winding up has negative mean which shows that these group of bank cannot survive now and need to be shut down.

After discriminant analysis we got clear result that group 1 discriminant score is positive whereas group 2 score is negative that signifies that RBI planning of winding up of bank is not performing well. Discriminant score of the banks has been calculated of previous year when decision is taken to merged or shut down the units. Results prove that is discriminant analysis can be used as prediction of bank failure. Negative score means banks are going in direction of closing down and soon it will fail or bankrupt. Hence MDA is successful in predicting bank failure 1 year prior to merger with another bank.

5.3 CONCLUSION:

As RBI has introduced IBC (Insolvency and bankruptcy code 2016), which will give very less time to organizations to recover of liquidate the business, so in that case it is very important for banks to identify failure signs in advance, so that they can take corrective in advance. This study has verified bank failure model on testing the ratios of weak bank on the basis of decision taken by the RBI that has proved that bank failure model can be used by bank to know early sign of bankruptcy.

This paper concludes, that overall rating of banks give the clear picture of performance of Indian banking industry. Axis Bank and Yes bank are top rated, Whereas DCB bank and Dhanlaxmi bank come under below performer rating and rest of bank comes under average performer rating. That shows that performance of banks in India is not satisfactory where banks included in sample are topmost banks in India that raise big question on efficiency of Indian banking sector. The discriminant model gives 5 such ratios from set of 35 ratios prescribed by RBI while evaluating performance of banks in India. Further analysis is done to check whether these ratios are capable to predict bank failure or not. As analysis is done on the basis of 5 ratios, MDA score of banks 1 year prior to merger is negative in case of bank RBI is proposing to shut down. MDA is applied on same set of ratios of bank to whom RBI has merged with other banks and the results are positive. Hence it can be concluded that MDA model is useful in predicting bank failure 1 year prior to merger or closing down.

6. NON-PERFORMING ASSETS AND SWING TRADING IN CAPITAL MARKET

Till now in the study NPA was found very crucial component in banks performance which banks have to declare quarterly, semester wise and yearly so, Literature gave rise to one question that when banks declare their results how crucial that information can be for stock price of the same bank for the trading opportunities.

This study examines the relationship between NPA announcements by banks and the impulsive movement in bank stock price brought out by these announcements. NPA basically locked the shareholders fund in it and performance of NPA impacts the performance of bank stock price. Primary focus of this study is to know the impact of NPA movement on bank share performance on which basis attempt has been made to create a swing trading model based on back testing the data for the banking stocks listed on the Indian bourses.

The main objective of this study is two-fold. Firstly, it delves into investigating the relation between NPA movement and its impact on share price movement before and after 2 days of NPA declaration by the bank. Secondly, it tries to refine this knowledge in to an objectively defined trading plan for a short term trader

6.1 METHODOLOGY

To achieve this objective we created a database spanning ten years (2006 to 2016) and collected the daily share prices of eight banks listed on Bombay Stock Exchange (BSE). The relationship between share price and changes in NPA is studied on the basis of correlation studies and panel-data analysis. Although correlation studies does not establish any significant relationship, but the result of panel-data analysis clearly shows a negative relationship between the two. The result is further utilized to develop swing trading model and get benefit out of it. The novelty of the present study is that it clearly guides the swing traders as to how to earn benefit because of fluctuations in share price due to announce of NPA result.

6.2 TOOLS:

Correlation

Back Testing

Panel Data Analysis

Table: 6.1

Summary of Correlation and Win/Lose Traded

	SBI		**PNB**		**BOB**		**Axis Bank**		**HDFC**		**ICICI**		**Kotak Mahindra**		**IDBI**	
Correlation	**-0.36**		**-0.44**		**-0.55**		**0.003**		**0.21**		**-0.13**		**-0.34**		**-0.08**	
	Win Trade	**Lose Trade**	**Win Trade**	**Lose Trade**	**Win Trade**	**Lose Trade**	**Win Trade**	**Lose Trade**	**Win Trade**	**Lose Trade**	**Win Trade**	**Lose Trade**	**Win Trade**	**Lose Trade**	**Win Trade**	**Lose Trade**
No. Of Trades	7	3	8	2	6	4	6	4	7	3	5	5	7	3	3	6
Return	50%	6%	56%	4%	67%	8%	22%	7%	18%	15%	30%	9%	43%	5%	6%	12%
Total Return	**44%**		**52%**		**59%**		**15%**		**3%**		**21%**		**38%**		**-6%**	

Above table explains the correlation between change in NPA and change in Share price. It was found in the study that all public sector banks except IDBI having negative bit insignificant relation and in case of Axis bank and HDFC were found positive but insignificant relationship.

It was further tested in model that if a swing trader makes trade on the basis of given correlation what return along with different trades he will get. To improve on this model we have also back-tested the more profound 2% stop loss scenario to improve upon the Risk-Reward profile for the trader. So in brief, the strategy we suggest for this wing trading model can be defined as follows:

1. Understand the correlation between NPA and 4-day stock movement for your banking stock.
2. On the basis of above correlation, +ve or –ve, trade this stock on the next result event.
3. Do not focus on the magnitude of the correlation only caveat being that it should not be close to zero.
4. After entering the trade, hold the stock for 4 days and exit on the close of this 4^{th} day.
5. Do not set any profit target but it is advisable to put a loss target of 2%.

It was found in case of SBI that if trader on the basis of negative correlation, go with short trade if NPA increases and vice-versa, his winning trade will be more than losing trade with 44% return. In case of other banks as well except IDBI, all the banks were giving positive returns on basis of win lose trade.

It was found in the model that if correlation was very insignificant (close to 0) the return based on the above rules provide paltry returns whereas trades where we observe significant correlation (close to +/- 1) we can expect generating fair returns. That shows that if a swing trader on the basis of given correlation make a trade and take the position 2 days prior of NPA results to 2 days after he/she can generate positive returns on these stocks.

6.3 CONCLUSION:

The money locked up in NPAs has a direct impact on shareholders' investment, profitability and market capitalization of the bank as Indian banks are highly dependent on income from interest on funds lent. This analysis has been emphasized for the period of 2006- 2016. In this period the NPA of SBI was on a rise and the stock prices were as usual in there waves. Similar observations could be made for other banking stocks as well. Through this study we

can safely conclude that NPA may not be a strong or the only criteria for judging the health of any particular bank and making an investment decision solely based on this but we can use NPA as a catalyst in generating positive returns as this can be used to identify and exploit the herd mentality of the crowd and the emotional impact, though short term, this crowd brings in to the stock market due to its actions prodding out more due to emotions than based on facts and data.

7 FINDINGS AND DISCUSSIONS OF THE STUDY

Public banks were having good productive efficiency with reference to input output. But in case of separate variables analysis of camel rating which reflects financial health of banks, it was found that all banks are having good capital adequacy ratio. In case of public banks high capital adequacy ratio leads to lower management efficiency due to less availability of funds as most of funds have been reserved in form of capital adequacy. Poor management can also lead to bad loans by wrong lending decisions that we can see on asset ratio and management efficiency ratio but shocking results were found when even after lower circulation of funds PSB are having higher NPA and when earnings ratio was compared among sectors all sectors were found satisfactory. It was also found in the study when performance of all three sectors was compared, foreign banks are somehow having different agenda tilted towards in investments so comparison of foreign banks with public and private banks is not advisable. So with reference so first objective public sector banks were found efficient but merely generating more profits and expanding the spread is not sufficient to prove the efficiency of the banks, the path of growth and NPA management is also important. It all depends upon how the banks get maximum output from minimum inputs. So all sectors were rated well but PSBs were found poor in asset quality (NPA) and lower management performance.

In context of second objective, study has work as in indicator of bankruptcy and it was found that Public sector banks sacrifice huge portion of their profits for the NPA provision creation as compared to private banks which became biggest reason for their failure in CAMEL ratio. NPAs upon banks erode current profit through provisioning requirements which result in reducing the interest income and profit. Bank failure model was proposed and tested on the decisions taken by RBI was found useful in predicting bank failure and if banks are regularly using this model they can get sign of bankruptcy in advance and can cure it specially in case of public sector banks.

With reference to third objective, this study has developed a back testing model which has been done first time in India and it found NPA performance as a reliable information in generating positive returns as this can be used to identify and exploit the herd mentality of the crowd and the emotional impact, though short term, this crowd brings in to the stock market due to its actions prodding out more due to emotions than based on facts and data. The money locked up in NPAs has a direct impact on shareholders' investment, profitability and market capitalization of the bank as Indian banks are highly dependent on income from interest on funds lent. When we tested NPA and stock price relationship with its efficacy in trading opportunity through back testing model in capital market, possibility for swing trader to predict the return and its magnitude of return using this developed model was found possible.

8 CONCLUSION OF THE STUDY:

Public banks are very important segment of financial sector, somehow being government bank they have more social responsibility towards the society, which affects their performance level. Public banks were found more efficient in case of productivity as compared to others but still not performing well. Current study has validated bankruptcy model which will help banks to know early sign of failure in advance which will protect them from bad effects of IBC 2016. Banks are under too much pressure to implement Basel III norm till 31st march 2019 which is also affecting their decision as banks have to show CAR of Rs. 120 lakh Crore rupees. The money locked up in NPAs has a direct impact on shareholders' investment, profitability and market capitalization of the bank as Indian banks are highly dependent on income from interest on funds lent. When we tested NPA and stock price relationship with its efficacy in trading opportunity through back testing model in capital market, possibility for swing trader to predict the return and its magnitude of return using this developed model was found possible. Banks needs to do keep proper watch on their financials; proper use of its financials and less window dressing can give them clear picture about their survivorship.

9 LIMITATIONS OF THE STUDY AND SCOPE FOR FUTURE RESEARCH

The study has few limitations like, it focus on only banks existing in India. Methodology that has been used in this study on banks in India like back testing model for trading opportunity

and bank failure model raise question that will these models works in foreign country same way they have worked in banks in India. So, further research can be done using same models and approaches on foreign countries and comparing it with banks in India. Window dressing in bank's financials can disturb the results of the study.

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- International Conference at FORE School of Management, New Delhi, 28-29th Nov. 2014.

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